

FRANKEN et al. -- 10/615,421
Attorney Docket: 081468-0304791

IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Previously presented) A lithographic projection apparatus, comprising:
 - a radiation system constructed and arranged to provide a beam of radiation;
 - a support constructed and arranged to support a patterning device, the patterning device constructed and arranged to pattern the beam according to a desired pattern;
 - a substrate table constructed and arranged to hold a substrate;
 - a projection system constructed and arranged to project the patterned beam onto a target portion of the substrate;
 - a base to which the support and the substrate table are mounted; and
 - a reference frame compliantly mounted to the base, wherein the projection system comprises at least one optical element mounted on a projection frame that is compliantly mounted to the reference frame.
2. (Original) A lithographic projection apparatus according to claim 1, wherein an eigenfrequency of the projection frame compliantly mounted to the reference frame is between about 10 and 30 Hz.
3. (Original) A lithographic projection apparatus according to claim 1, wherein an eigenfrequency of the reference frame compliantly mounted to the base is about 0.5 Hz.
4. (Original) A lithographic projection apparatus according to claim 1, wherein the projection system is compliantly mounted to the reference frame by at least three compliant mounts.
5. (Original) A lithographic projection apparatus according to claim 1, wherein the projection system is mounted to the reference frame on nodal axes of a dominant mode of bending vibration of the reference frame or a torsional vibration of the reference frame.
6. (Original) A lithographic projection apparatus according to claim 1, wherein the

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projection system is compliantly mounted to the reference frame by at least one compliant mount, the compliant mount comprising:

a T-shaped member with one of the projection system and the reference frame attached to both ends of a first elongate member of the T-shaped member and the other of the projection system and the reference frame is attached to an end of a second elongate member of the T-shaped member.

7. (Original) A lithographic projection apparatus according to claim 6, wherein the T-shaped member has an internal first eigenfrequency that is greater than 1000 Hz.
8. (Original) A lithographic projection apparatus according to claim 1, wherein the projection system is compliantly mounted to the reference frame by at least one compliant mount that is one of an air-mount, a spring and a magnetic support.
9. (Original) A lithographic projection apparatus according to claim 1, wherein motion of the projection system relative to the reference frame is damped.
10. (Original) A lithographic projection apparatus according to claim 9, wherein the motion of the projection system relative to the reference frame is actively damped by piezoelectric actuators or Lorentz-force actuators.
11. (Previously presented) A device manufacturing method, comprising:
projecting a patterned beam of radiation onto a target portion of a layer of radiation-sensitive material at least partially covering a substrate using a projection system;
supporting a reference frame, a support constructed and arranged to support a patterning device, and a substrate table constructed and arranged to hold the substrate, on a base, wherein the reference frame is compliantly mounted to the base and the projection system is mounted to the reference frame; and
compliantly mounting the projection system to the reference frame while projecting the patterned beam of radiation onto the target portion.
12. (Original) A method according to claim 11, wherein the projection system comprises at least one optical element mounted on a projection frame that is compliantly mounted to the

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reference frame and an eigenfrequency of the projection frame compliantly mounted to the reference frame is between about 10 and 30 Hz.

13. (Original) A method according to claim 11, wherein an eigenfrequency of the reference frame compliantly mounted to the base is about 0.5 Hz.

14. (Original) A method according to claim 11, wherein the projection system is compliantly mounted to the reference frame by at least three compliant mounts.

15. (Original) A method according to claim 11, wherein the projection system is compliantly mounted to the reference frame on nodal axes of a dominant mode of bending vibration of the reference frame or a torsional vibration of the reference frame.

16. (Original) A method according to claim 11, wherein the projection system is compliantly mounted to the reference frame by at least one compliant mount, the compliant mount comprising:

a T-shaped member with one of the projection system and the reference frame attached to both ends of a first elongate member of the T-shaped member and the other of the projection system and the reference frame attached to an end of a second elongate member of the T-shaped member.

17. (Original) A method according to claim 16, wherein the T-shaped member has an internal first eigenfrequency that is greater than 1000 Hz.

18. (Original) A method according to claim 11, wherein the projection system is compliantly mounted to the reference frame by at least one compliant mount that is one of an air-mount, a spring and a magnetic support.

19. (Original) A method according to claim 11, wherein motion of the projection system relative to the reference frame is damped.

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20. (Original) A method according to claim 19, wherein the motion of the projection system relative to the reference frame is actively damped by piezoelectric actuators or Lorentz-force actuators.

21. (Previously presented) A lithographic projection apparatus, comprising:
a radiation system constructed and arranged to provide a beam of radiation;
a support constructed and arranged to support a patterning device, the patterning device constructed and arranged to pattern the beam according to a desired pattern;
a substrate table constructed and arranged to hold a substrate;
a projection system constructed and arranged to project the patterned beam onto a target portion of the substrate;
a base to which the support and the substrate table are mounted;
a reference frame mounted to the base, wherein the projection system comprises at least one optical element mounted on a projection frame that is mounted to the reference frame;
at least one first isolation mount operatively between the reference frame and the base to inhibit vibrations or movements of a predetermined type from being transmitted from the base to the reference frame; and
at least one second isolation mount operatively between the reference frame and the projection frame to inhibit vibrations or movements of a predetermined type from being transmitted from the reference frame to the projection frame.